



APBI 2004



**Department of Defense (DoD)
Chemical and Biological Defense Program
Test & Evaluation Executive Agent
(T&E EA)
6 April 2004**

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*DoD T&E EA***



Joint CBDP T&E: Topics



- Who We Are
- Why We Are Here
- What We Do
- Where We Are
- What This Means to You



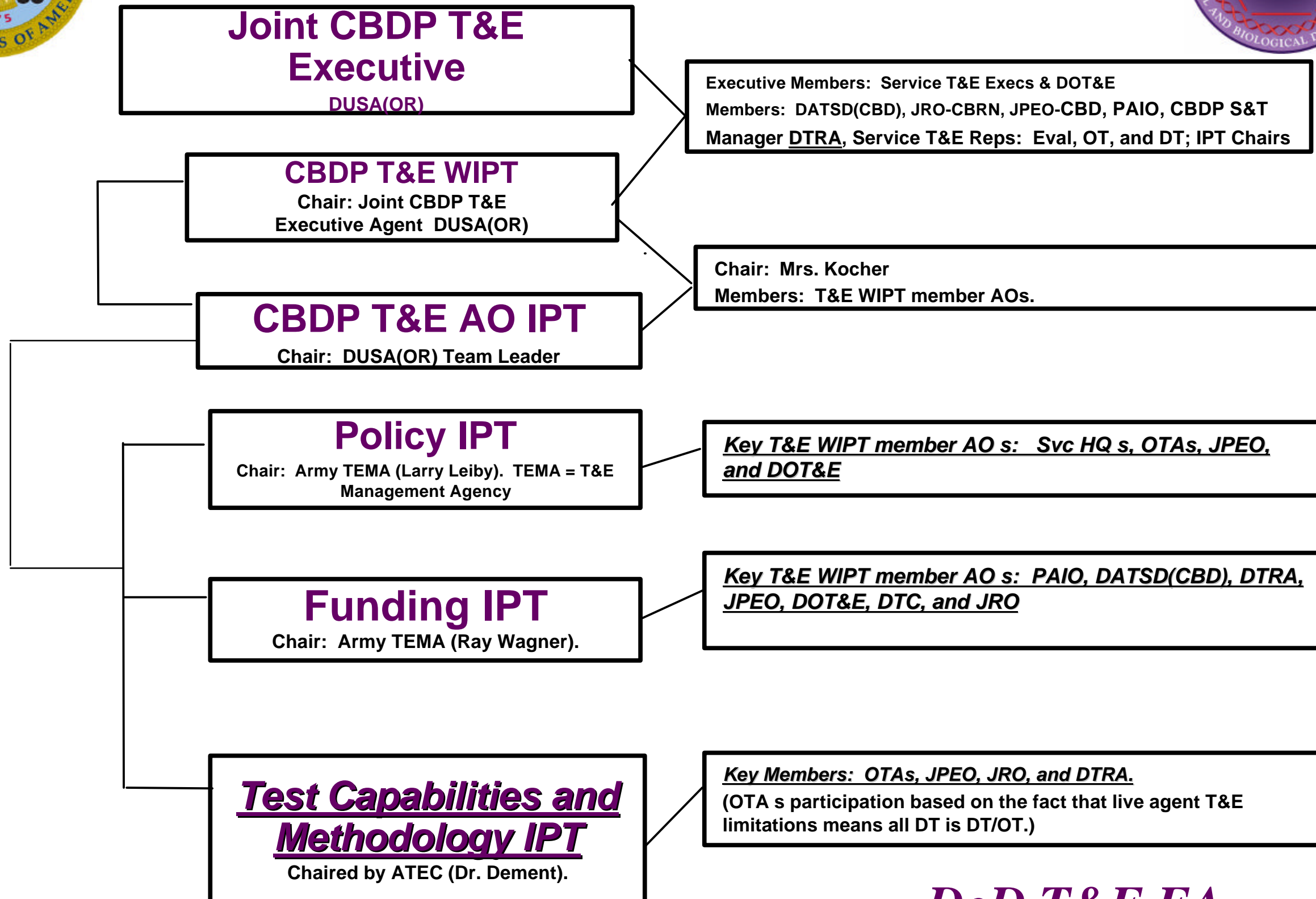
Who We Are



- The DUSA(OR), Mr. Hollis, was designated as the DoD T&E Executive Agent for the CBDP in June, 2003
- We manage and coordinate T&E related efforts on a community-wide basis for all stakeholders (DTRA, JRO, JPEO, OTAs, Service HQs, DOT&E)



CBDP Joint T&E: Structure



DoD T&E EA



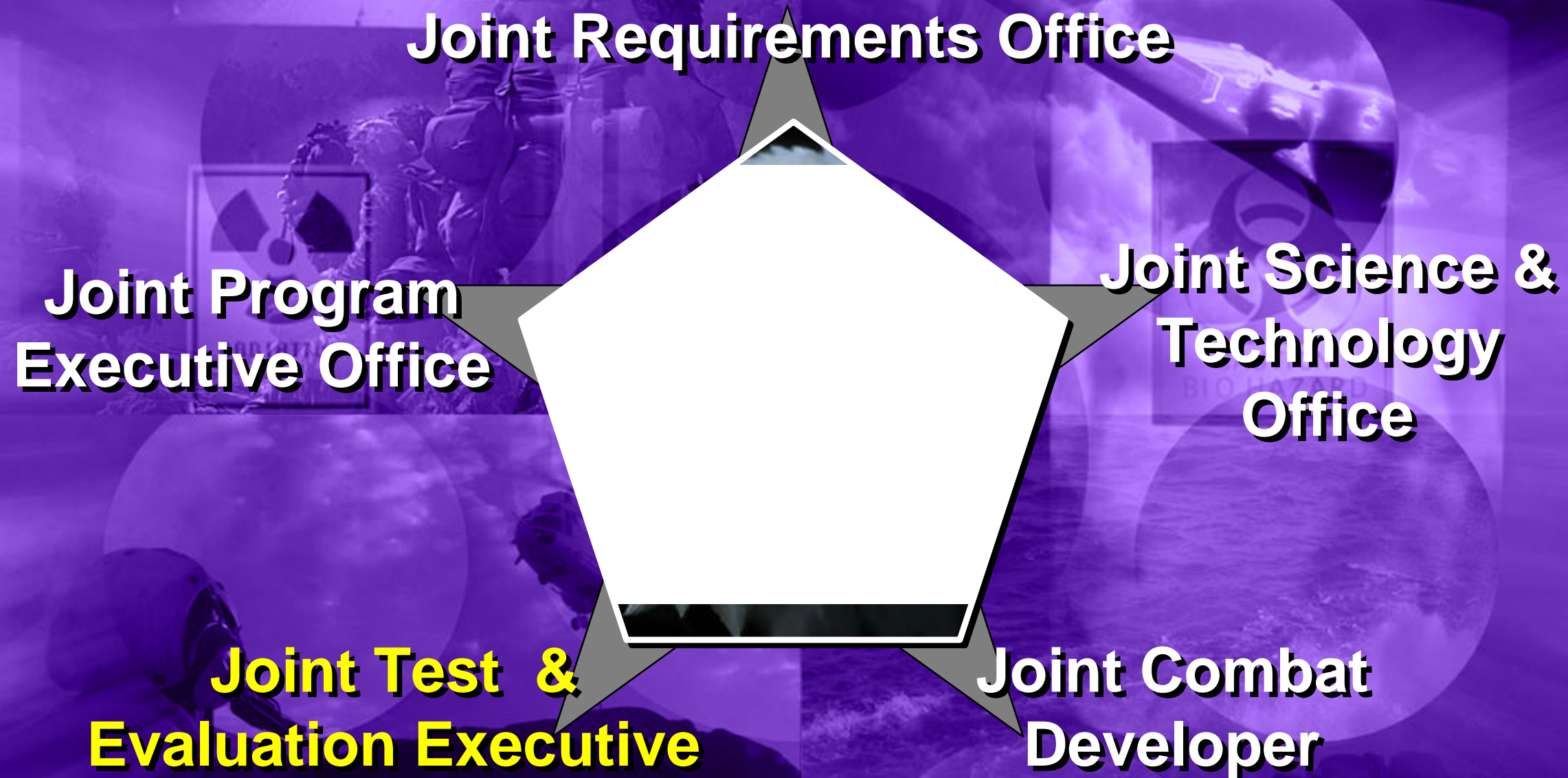
Values/Guiding Principles as Basis for T&E EA Efforts



- **Sufficient, timely, and cost-effective T&E to support CBDP decisions**
- **Jointness**
- **Community Involvement**

“None of us is as smart as all of us”

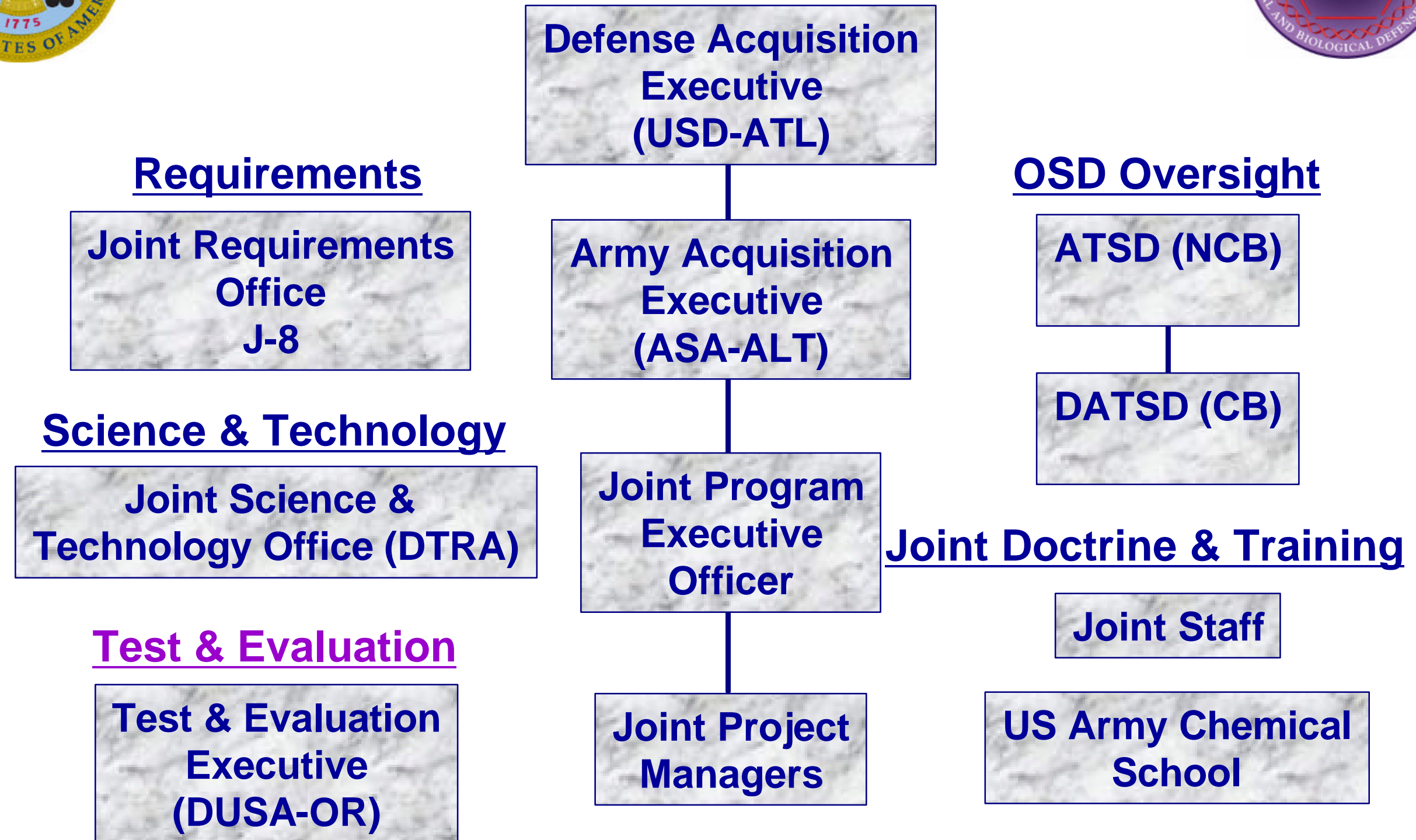
Joint Service Chemical and Biological Defense Program



*Delivering Joint
Warfighting Capabilities*



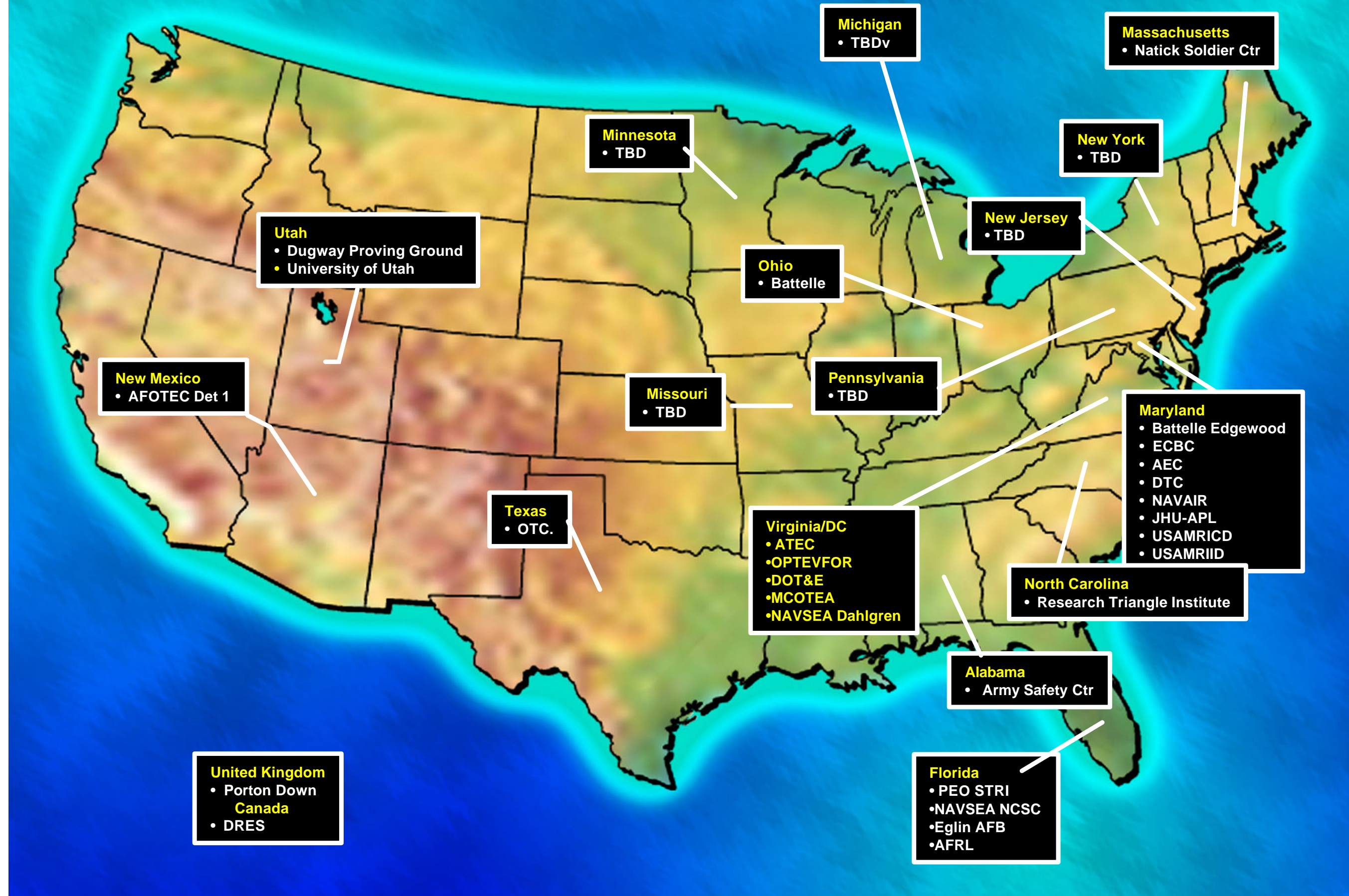
Chem Bio Defense Program Acquisition Organizations



P.L. 103-160

DoD T&E EA

Joint CBDP T&E Partners





Some Definitions



- T&E: Test & Evaluation (broad term)
- Integrated T&E: T&E that has common processes, procedures, and standards over phases, among tests, and among test data sources and repeated trials
- Joint T&E: T&E in which >1 Service is involved OR in which data will be used by >1 Service Evaluation



Some Definitions



- IPTs—system and CBDP: Integrated Process Teams; can be for acquisition system OR for CBDP management or capability development
- WGs: Working Groups



Some Definitions



- T&E Concepts: Description of how to test and:
 - what questions are to be answered;
 - what tests are required and how a series of tests synergize to answer the questions
- T&E Capabilities: infrastructure (physical and intellectual), test methods, procedures, models, documentation, and data package which together constitute the ability to perform a test and analyze/interpret the data that supports a decision and ultimately fielding systems to the warfighters



Why We Are Here



How frequently have you heard these:

- “Tests Cost Too Much and Take Too Long”
- “You Cannot Compare Data Among Tests”
- “It takes too long to get a TEMP signed”
- “We can’t Agree on test methods and procedures”
- “We do Too Much Testing because we have no basis to narrow down the conditions tested.”
- “Testing does not realistically represent the threat”

*ALSO: PL 103-160, Implementation Plan Apr 03,
CBDP Reorganization → Charter for T&E EA*

DoD T&E EA



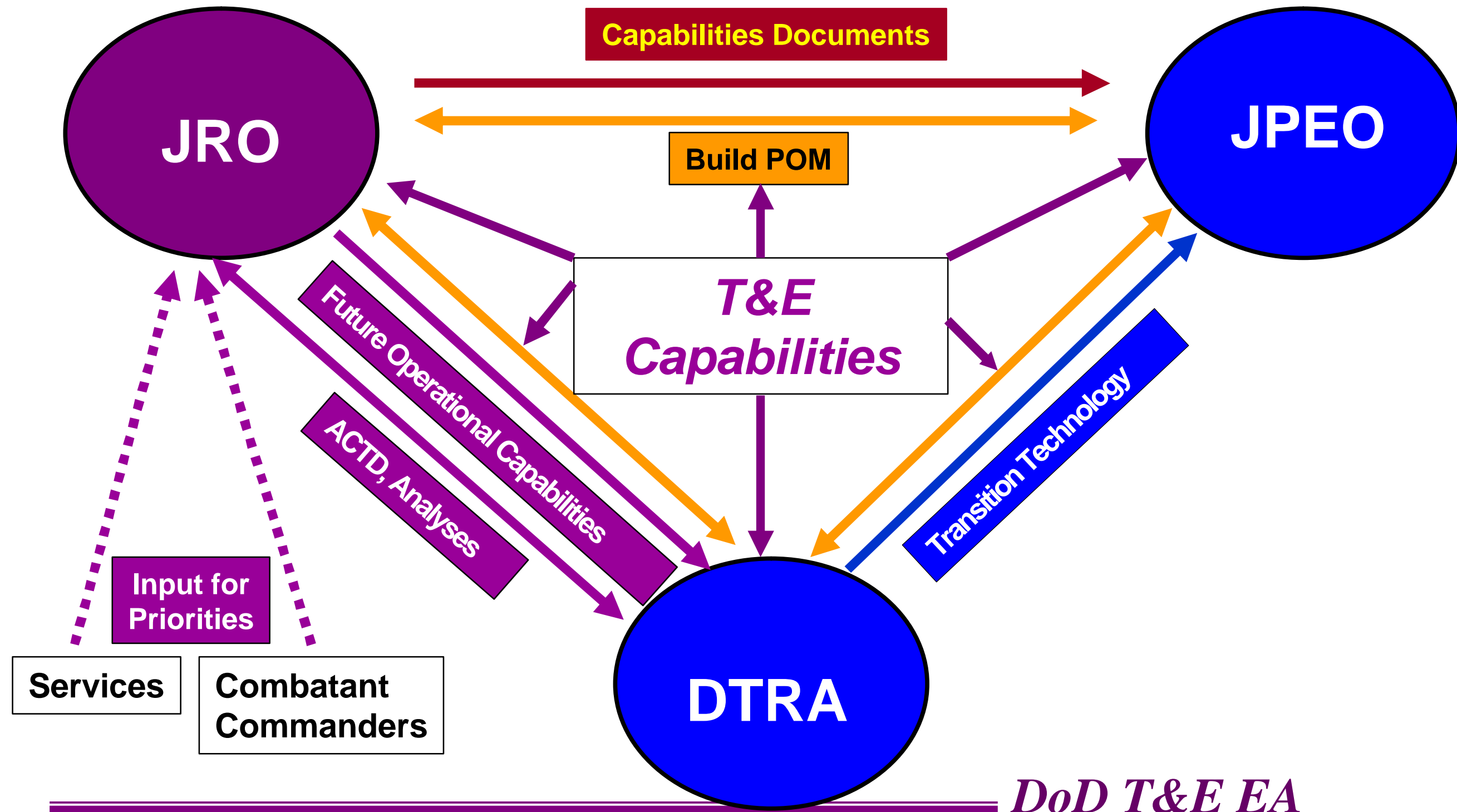
What We Do



- Establish common set of processes and standards for conduct of CBDP T&E
- Support integrated continuum of testing from S&T and Transition, through DT/OT: Integrate T&E across life cycle phases
- Ensure adequate and credible testing to support evaluation
- Develop protocols for T&E of equipment and systems
- Resolve T&E-related issues for community; Coordinate test plans
- Responsible for DT, OT, Combined/Joint/Multi-Service T&E *and Infrastructure for all of the above*
- *Manage T&E Infrastructure* *DoD T&E EA*

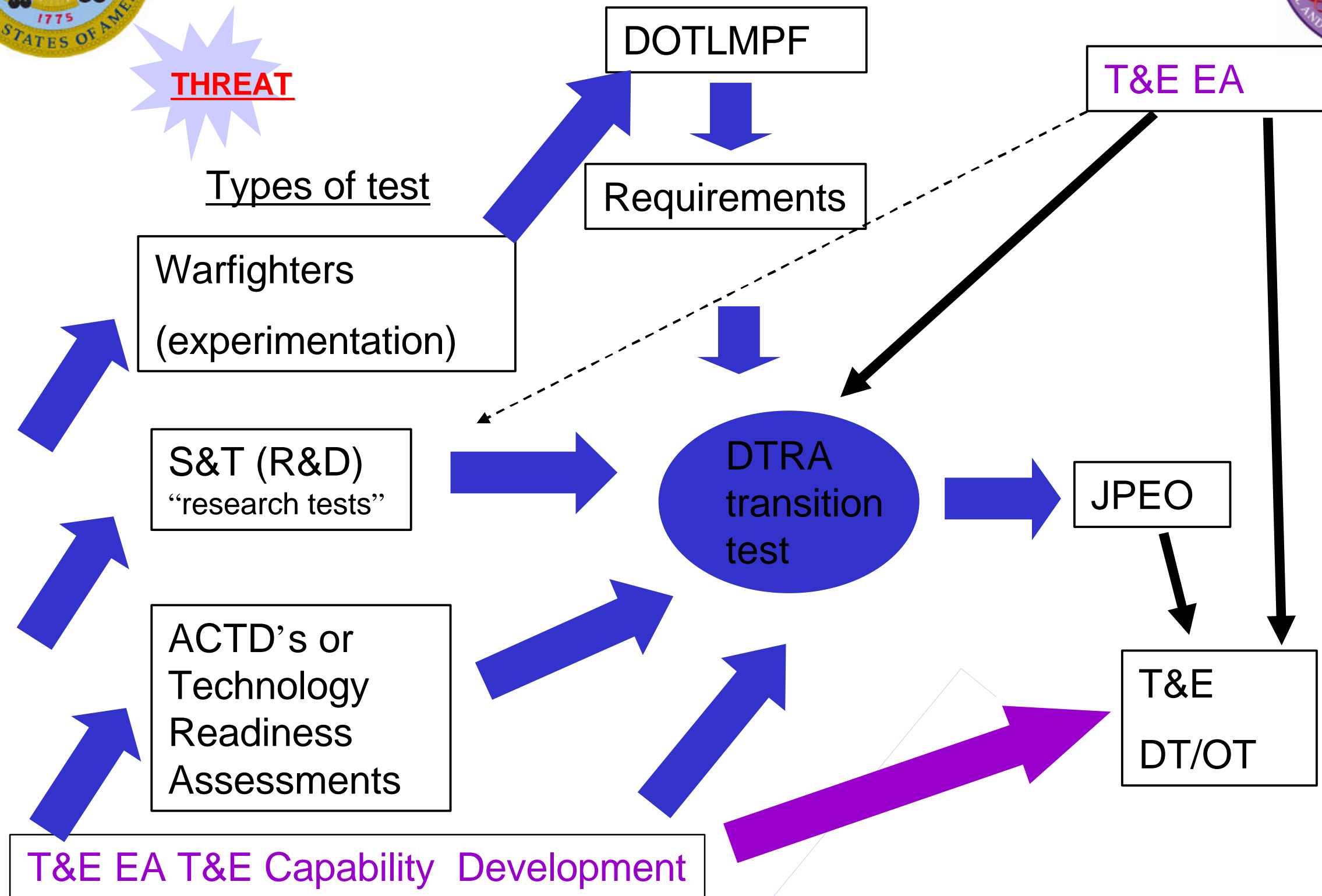


Our Role and Relationships





T&E EA Role Over Types of Tests



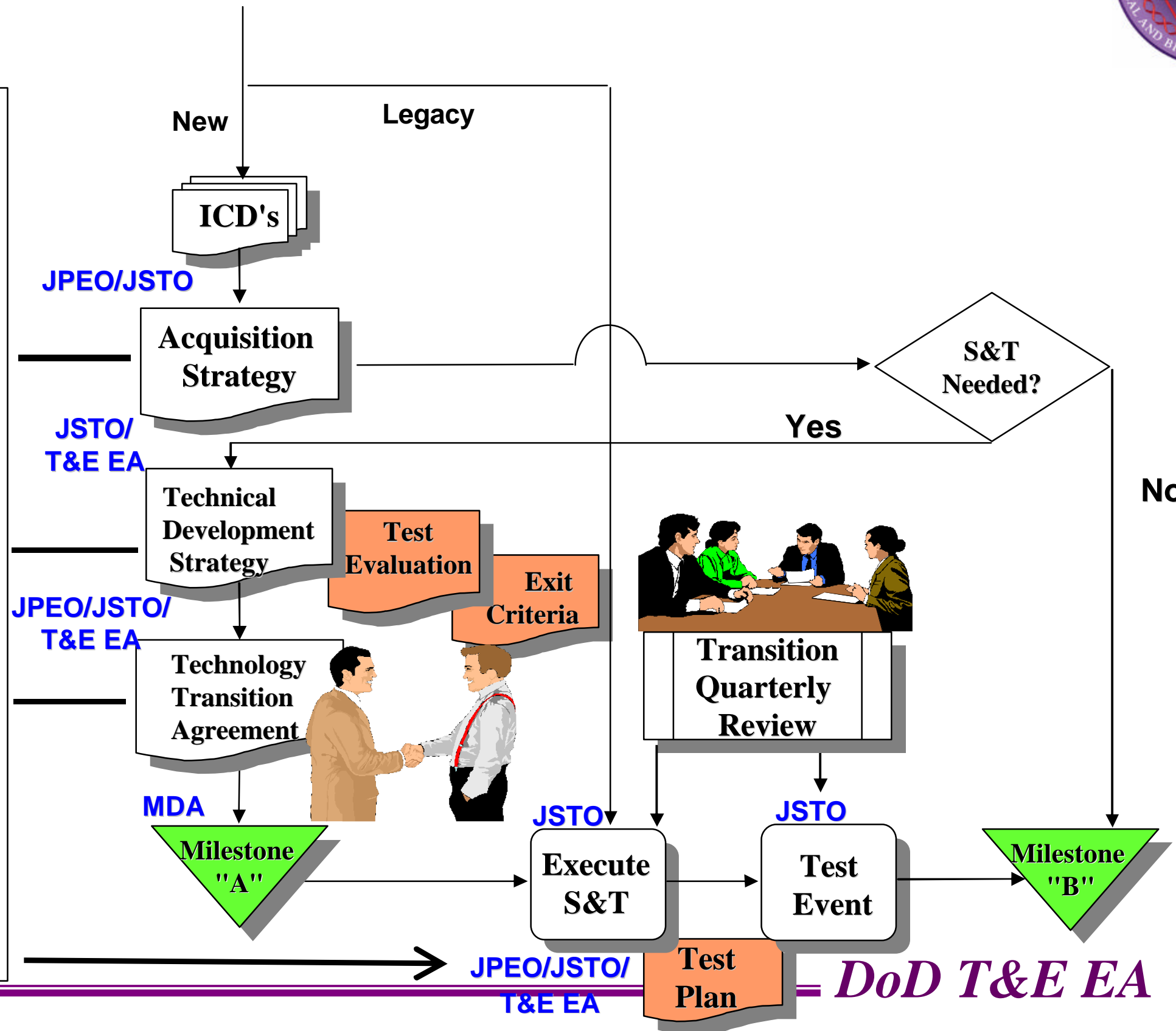
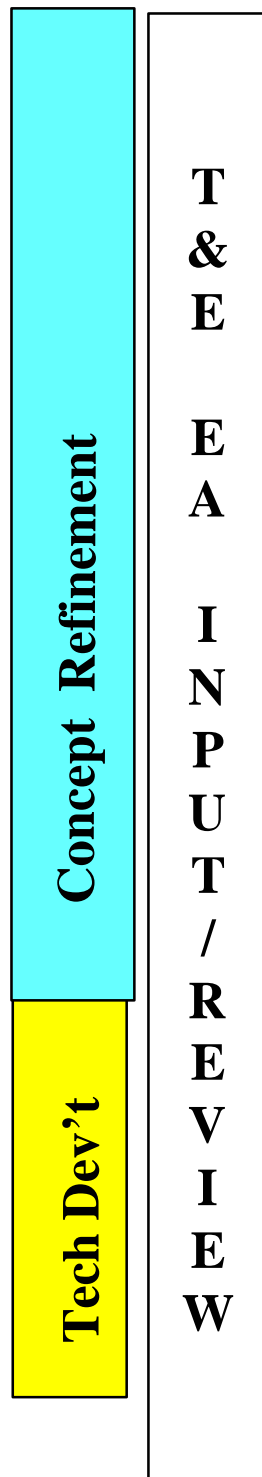
DoD T&E EA



DTRA Technology Transition Vision



PRE ACQUISITION



DoD T&E EA



Future CBDP T&E Infrastructure Vision



CBW Defense | Force Protection | Consq. Mgmt | HL Security

Coordinated Oversight/Participation

DUSA/OR

DOT&E

Others TBD

JRO-CBD

JPEO-CBD

OTAs

Integrated Test & Evaluation

Joint Plans and Reports for CBRND T & E, developed by lead OTA w/T&E EA/DOT&E guidance; full OTAs participation in defining T&E needs of joint CBRN defense capability across the spectrum of warfare

Coordinated Funding

CBDP T&E EA coordinates Test & Evaluation and Development of Test & Evaluation capabilities to support all mission areas requiring CBRN defense capability.

Coordinated Execution

CBDP T&E Infrastructure coordinates Test & Evaluation for DOD mission areas requiring CBRN defense capability.

DoD T&E EA



T&E Infrastructure Accomplishments



- **New Policy (Nov 03)→application in process**
- **Formed Test Capabilities Work Groups for community buy in, defensible initial T&E Capabilities Needs Definition for FY 06 POM**
- **In process of integrating all Services' OTA needs to be involved throughout process**



Roles of Action Officer IPT



- **Involve stakeholders & structure efforts to execute T&E EA role**
- **Facilitate issue resolution before requiring elevation to the T&E WIPT**
- **Consolidate issues and proposed resolutions addressed by the other IPTs for forwarding to the T&E WIPT when necessary, including POM submission**



Roles of Funding IPT



- Prepare RDT&E and MILCON validated requirements based on Prioritized List of Capabilities from T&E Capabilities IPT
- Develop a centralized manpower DT/OT funding line for T&E personnel, DT early involvement (prior to program initiation), and Test Facility Capabilities personnel (TEMP development, IPT attendance, OT observation of DT events, T&E strategy development)
- Institutionalize management and oversight of CBDP T&E resources by creating and funding a management activity for the T&E capabilities program (Institutionalize functions of current IPTs)
- Request/coordinate a centrally funded Threat Test Support Package office (secure PM funds for FY04/05 operations)
- Required Products: Final POM input, management process, and coordination through POM process

DoD T&E EA



Roles of Policy IPT



- **Identify CBDP T&E issues and develop policy as required; refer non-policy issues to AO IPT for appropriate resolution by other means**
- **Establish policy that is community-agreed and that will execute the Implementation Plan**
- **Required Product: Policy Memo**
 - ➔ **“common set of processes”**



Policy IPT Actions



- **Memo (in final adjudication of JPEO, AFOTEC comments) provides:**
 - **Common set of policies and standards**
 - **Issue resolution process**
 - **TEMP approval and signature process**
 - **Policy for T&E of urgent needs**
- **Follow-on actions will address additional policy areas as needed**



Roles of T&E Capabilities/Methodology IPT



- Establish joint coordinated T&E concepts to guide T&E req'ts
- Identify and address T&E Capability shortfalls on a bi-yearly basis for POM cycle
- Provide processes/criteria to obtain standardized and validated test methodologies; promote use of these procedures in S&T/R&D
- Required Products:
 - T&E concepts and standardized test procedures for each type of test/functional area → “common set of standards”, → “JTOPS”
 - Matrix of characteristics of existing CB T&E capabilities accessible by DOD: all Services, academia, and industry, and required CB T&E capabilities needed by DOD for S&T/RDA
 - Shortfalls of T&E Capabilities and proposed T&E capabilities funding requirements for the 06 POM and FYDP prioritized and integrated across functional areas



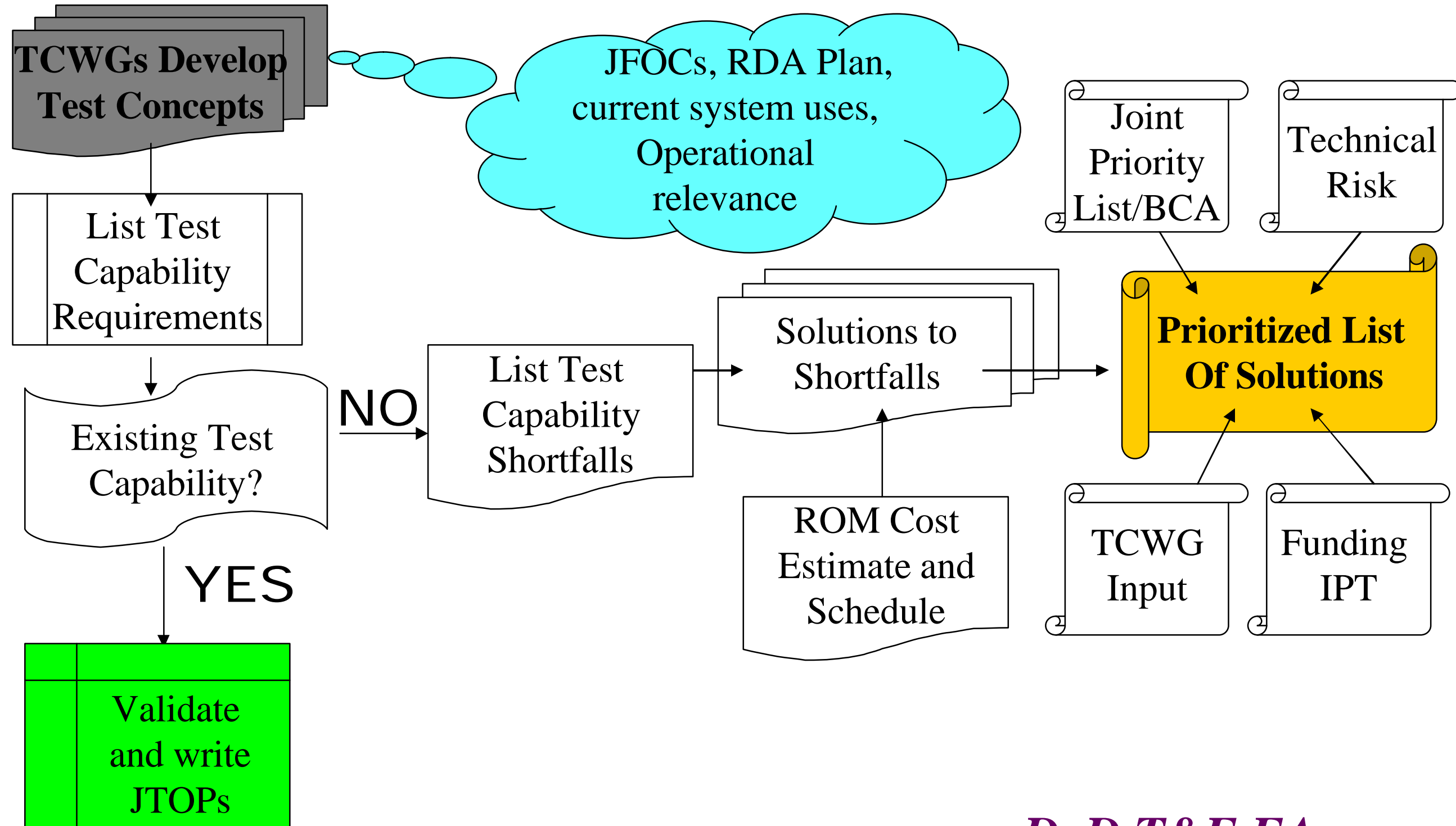
Test Capabilities/Methodology IPT Actions



- Developed approach to identify test capabilities shortfalls and strategy to support POM submission
- Established Test Capabilities Working Groups under each JPM
- Drafted strawman test concepts, guidance for POM
- Integrate T&E Infrastructure needs across functional areas (JPEO & JRO support needed), schedules
- Focus was input to POM Submission
- Provide rationale to defend T&E Infrastructure needs
- Test Capabilities/Methodology IPT will be iterative

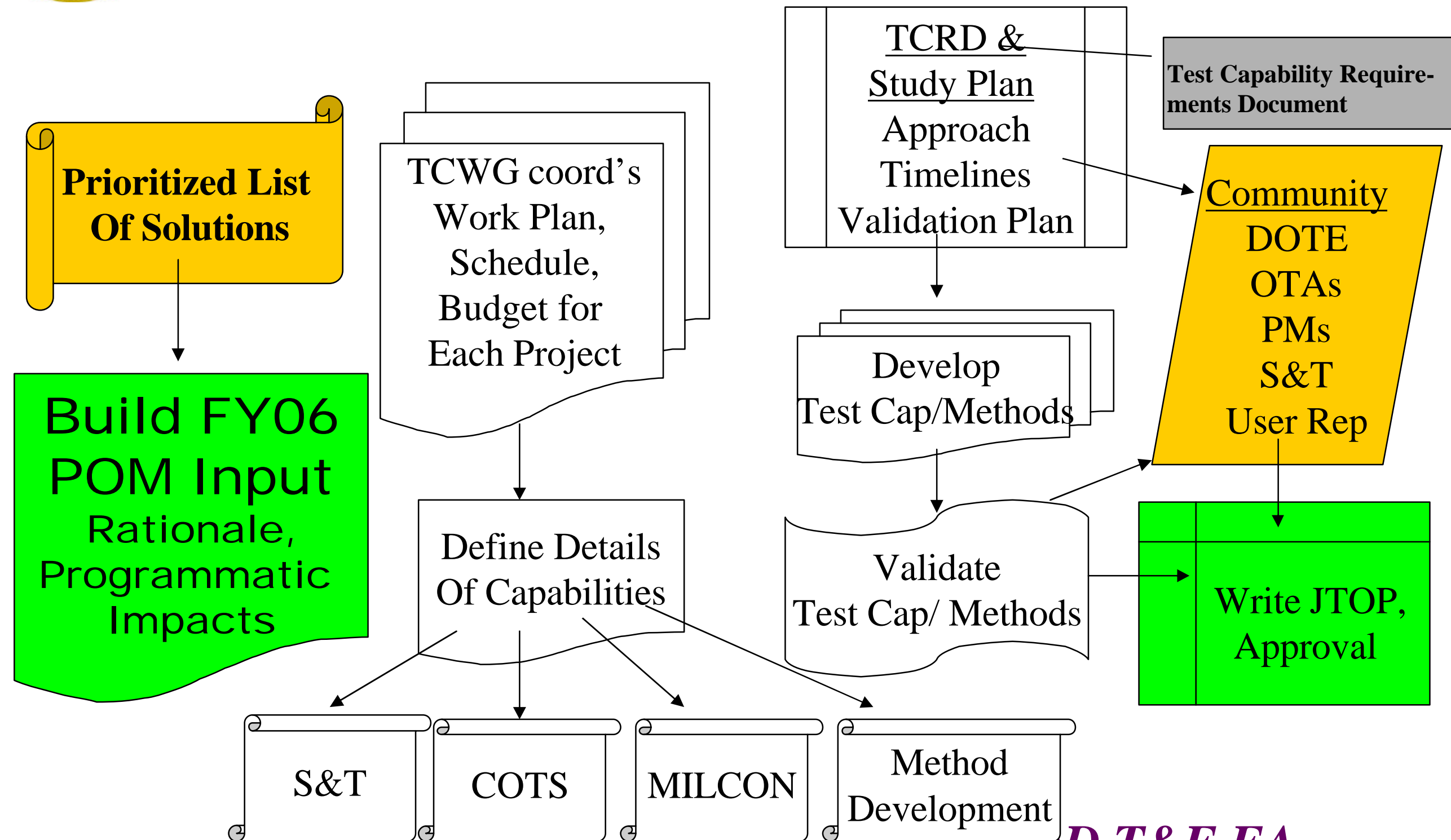


CB T&E Infrastructure Development Process Flowchart





CB Test Infrastructure Process Flowchart (Cont)



DOD T&E EA



Joint CBDP T&E:



What It Means to You

- A Centralized Process for T&E Needs:
 - Identification
 - Requirements Definition
 - Investment
 - Management
- Mechanism for leveraging all test technology sources:
 - Government
 - Industry
 - Academic

DoD T&E EA



CBDP Infrastructure



Owner	T & E (non medical)	S & T (medical and non medical) and T&E (medical)	Training
Army	Physical: •Base Ops for Dugway Proving Ground Intellectual: ATEC	•ECBC (non-med CB) •USAMRMC (med CB) USAMRIID, USAMRICD, WRAIR, USARIEM)	• Ft Leonard Wood –Joint NBC TNG FAC
Air Force	Physical: •Eglin customer-funded field tests •Intellectual: AFOTEC Det 1	•Brooks City Base(Hum Sys) • AF Research Lab • AF Force Prot Battle lab	
Navy/ Marine	Physical: Naval Surface Warfare CTR Dahlgren Intellectual: OPTEVFOR, MCOTEA	•Naval Surface Warfare CTR •Naval Research Lab •Naval Med Research CTR	
Joint	•Physical: •DPG MRTFB including on site facilities and mobile instrumentation capabilities LSTF, MTF, CCTF, field test grids, ABT, MIST Intellectual: DTC/DPG	• Armed Forces Radiological Research Institute	• Defense Sensor Tng Fac
OSD		• Armed Forces Institute of Pathology	

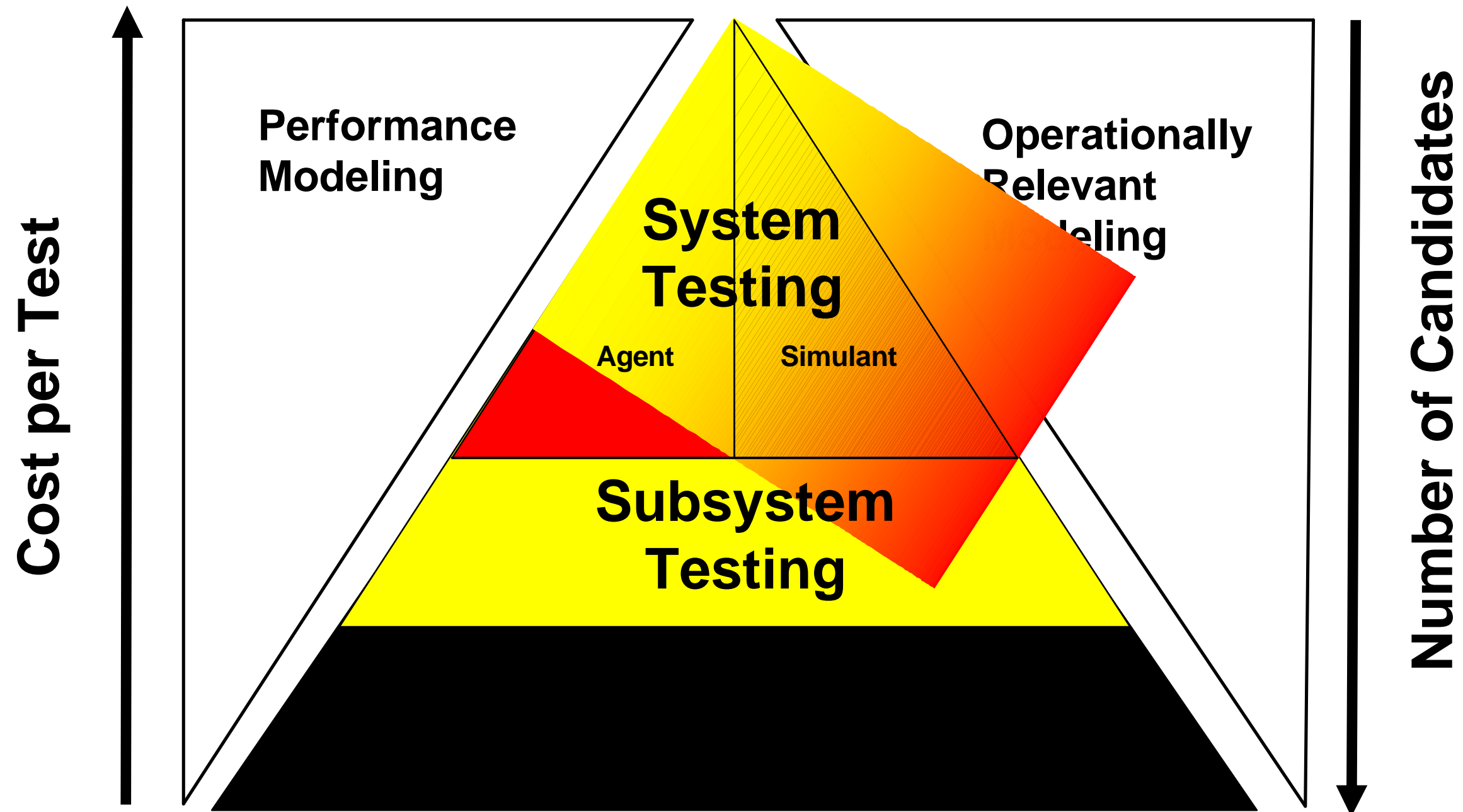
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Testing Architecture



The biggest gap is the lack of full system live agent testing across all areas and ability to provide impact info to Commanders.



DoD T&E EA



General T&E Gaps



- Standards for existing test capabilities
- Certified simulants
- NTA test methods
- TIC/TIM test methods
- Threat representative challenges – dynamic, multi-grade agents, explosive dissemination
- Overarching simulant environmental document



Sense T&E Gaps



- Active standoff detector test capability – Currently non-existent for actual agents
- Whole system live agent test for biodetector
- Adequate standoff detector tests (NAS recommendations)
 - Comprehensive database of agent, simulant, interferent, & background signatures
 - Spectral and algorithm stimulators
- Improved referee systems – chemical and biological
- Improved control & referee of interferent challenges
- Capability to synthetically stimulate detectors
- Capability to address infectivity of biological challenges



Shield T&E Gaps (cont)



- Ability to assess equipment in terms of protection
- Real time monitors – system and swatch tests
- Whole system/ensemble agent test capability
- Additional system test capability – liquid, aerosol
- New swatch test capability
- Mask test for biological agents
- Component level test methods
- Ensemble testing under field conditions



Sustain T&E Gaps (cont)



- Full system agent decon test
- Vapor and contact hazard assessment
- Overarching model
- Methods to address materials/performance degradation



Joint CBDP T&E



Where We Are



Prioritized Joint CBDP T&E Capabilities Requirements



T&E Capabilities Requirements



WEIGHTED RANKING		
IPT Priority	Project Description	Weighted Score
1	Bio WSLAT	21
2	NAS Implementation	19
3	Testing CBD systems with NTAs and emerging threat agents	18
4	Simulant Characterization and Agent/Simulant Correlations	18
5	Testing CBD systems with TICs/TIMs	18
6	CB Challenge and Performance Analysis	18
7	Full System Decontamination Test	18
8	Integrate and Establish Validated CPE Test Methods and Documentation	18
9	Overarching IPE model to support all RDTE	16
10	Testing performance of IPE systems under battlefield conditions	16
11	Test method for advanced filtration systems and capabilities.	16
12	CB Standoff Chamber Test Capability	15
13	CB Field Simulant Challenge Test Capability	15
14	Testing method for assessment of the performance of advanced filtration systems	15
15	CBRN Filter Residual Life Indicators (RLIs)	15
16	Test method for novel barrier materials.	15

Color Codes

White – All

Orange – Sense

Blue – Shield

Green - Sustain

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T&E Capabilities Requirements



IPT Priority	WEIGHTED RANKING	
	Project Description	Weighted Score
17	Develop Performance Ensemble Test System (PETS) for Live Agent Testing of IPE	13
18	Develop Chemical Biological Agent Resistance Test (CBART)	13
19	Biological Test of Mask Protective Capability	13
20	Overarching Decontamination Model to support RDTE	13
21	Decontamination Battlefield Performance Evaluation	13
22	Overarching Model for CPE systems throughout RDTE	13
23	Chem Point Chamber Test Capability	12
24	IPE Components Testing in Agent Environment	12
25	Improve and Standardize Decon Test Methods at Service Laboratories	12
26	Standardized Test Method for Material Degradation and Performance	12
27	Improve and Standardize ColPro test (agent and simulant) for entire platforms	12
28	Test capability to assess the performance of ColPro Seals (seams) and Closures	12
29	CBDP Environmental Doc Development for Simulants	10
30	Method to assess conventional weapons effects on ColPro systems	9
31	Bio Point Chamber Test Capability	9
32	Additional Test Grid Development	9
33	Water Monitor Test Methodology & Instrumentation Development	6

Color Codes

White – All

Orange – Sense

Blue – Shield

Green - Sustain

DoD T&E EA



Testing CBD Systems with Non-Traditional Agents (NTA)s and Emerging Threat Agents



Objective: Develop and validate methods to test all CBDP systems with non-traditional agents (NTA)s and emerging threat agents.

Develop and validate safety and environmental analytical methods



Test chambers, filters, and analytical equipment for NTA compatibility



Develop and validate specific test method



CPE/IPE



Cont. Avoid.



Decon



Write TOPS

Partners: DPG, ECBC, contract augmentation

DoD T&E EA



Testing CBD Systems with Non-Traditional Agents (NTA)s and Emerging Threat Agents



Benefit to warfighter: Testing with NTAs is necessary to ensure CBDP systems will protect the warfighter from the full range of potential warfare agents.

Challenges: There has been very little work done with NTAs. Methods to generate vapors and aerosols of them are largely unknown. Their reaction and impact on existing materials and structures could require new instruments and filtration systems.

Maturity of technology: Initial work has been completed at ECBC

Business Area: Is required in all commodity areas.



Testing CBD Systems with Non-Traditional Agents (NTA)s and Emerging Threat Agents



Major goals/milestones by FY:

FY-06 – Develop safety and HW analytical methods

FY-07 – Test chambers, filters, and instruments

FY-08-11 – Develop, validate, and write specific test methods
for each CBDP system

Funding (\$K):

<u>FY06</u>	<u>FY07</u>	<u>FY08</u>	<u>FY09</u>	<u>FY10</u>	<u>FY11</u>
1,020	3,505	4,000	2,470	1,450	400

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CSTE-DTC-DP-WD-CT-C

US Army Dugway Proving Ground

DSN: 789-5686, COMM: 435-831-5686

DoD T&E EA



Testing CBD Systems with Toxic Industrial Chemicals (TIC) and Toxic Industrial Materials (TIM)s



Objective: Develop and validate methods to test all CBDP systems with the 27 toxic industrial chemicals (TICs) and materials (TIMs) identified by the International Task Force.

Collect, test, and validate industrial analytical methods



Test chambers, filters, and analytical equipment for TIC/TIM compatibility. Replace as needed.



Develop and validate specific test method



CPE/IPE



Cont. Avoid.



Decon



Write TOPS

Workload: DPG, SBIR, University, and contract laboratories

DoD T&E EA



Testing CBD Systems with Toxic Industrial Chemicals (TIC) and Toxic Industrial Materials (TIM)s



Benefit to warfighter: Testing with TICs and TIMs is necessary to ensure CBDP systems will protect the warfighter from these threat materials, which are much more available for use than traditional agents.

Challenges: These are common industrial materials. The largest challenge will be to adapt existing test fixtures, filters, and/or chambers to use some of the more corrosive compounds.

Maturity of technology: Leverage Industry

Business Area: Is required in all commodity areas.



Testing CBD Systems with Toxic Industrial Chemicals (TIC) and Toxic Industrial Materials (TIM)s



Major goals/milestones by FY:

FY-06-07 – Modify and validate industry methods

FY-08 – Test chambers, filters, and instruments

FY-09-11 – Develop, validate, and write specific test methods for each CBDP system

Funding (\$K):

<u>FY06</u>	<u>FY07</u>	<u>FY08</u>	<u>FY09</u>	<u>FY10</u>	<u>FY11</u>
450	2,800	2,900	4,700	4,300	1,250

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CSTE-DTC-DP-WD-CT-C

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DoD T&E EA



Simulant Characterization and Agent/Simulant Correlation



Characterize specific
simulants for each bio
technology (e.g., immune
response, DNA sequence, etc.)



Validate Simulants



Agent/Simulant Correlations



Write TOPS

Characterize specific
simulants for each chem
technology (e.g.,
reactive fabrics, etc.)



Validate Simulants



Agent/Simulant
Correlations



Write TOPS

Objective: To validate and characterize better simulant materials for CB testing and perform extensive agent-simulant correlations to relate field simulant data to chamber agent data.

Workload: DPG, ECBC, contract augmentation

DoD T&E EA



Simulant Characterization and Agent/Simulant Correlation



Benefit to warfighter: Simulants allow testing CBDP systems in multiple environments and under operational conditions. All operational testing has to be done with simulants.

Challenges: There are some areas (decontamination) where adequate simulants will probably not be found.

Maturity of technology: Initial work in progress, related to programs.

Business Area: Is required in all commodity areas.



Simulant Characterization and Agent/Simulant Correlation



Major goals/milestones by FY:

FY-06 – Develop safety and HW analytical methods

FY-07 – Test chambers, filters, and instruments

FY-08-11 – Develop, validate, and write specific test methods for each CBDP system

Funding (\$K):

<u>FY06</u>	<u>FY07</u>	<u>FY08</u>	<u>FY09</u>	<u>FY10</u>	<u>FY11</u>
2,060	2,180	2,800	2,545	2,185	1,585

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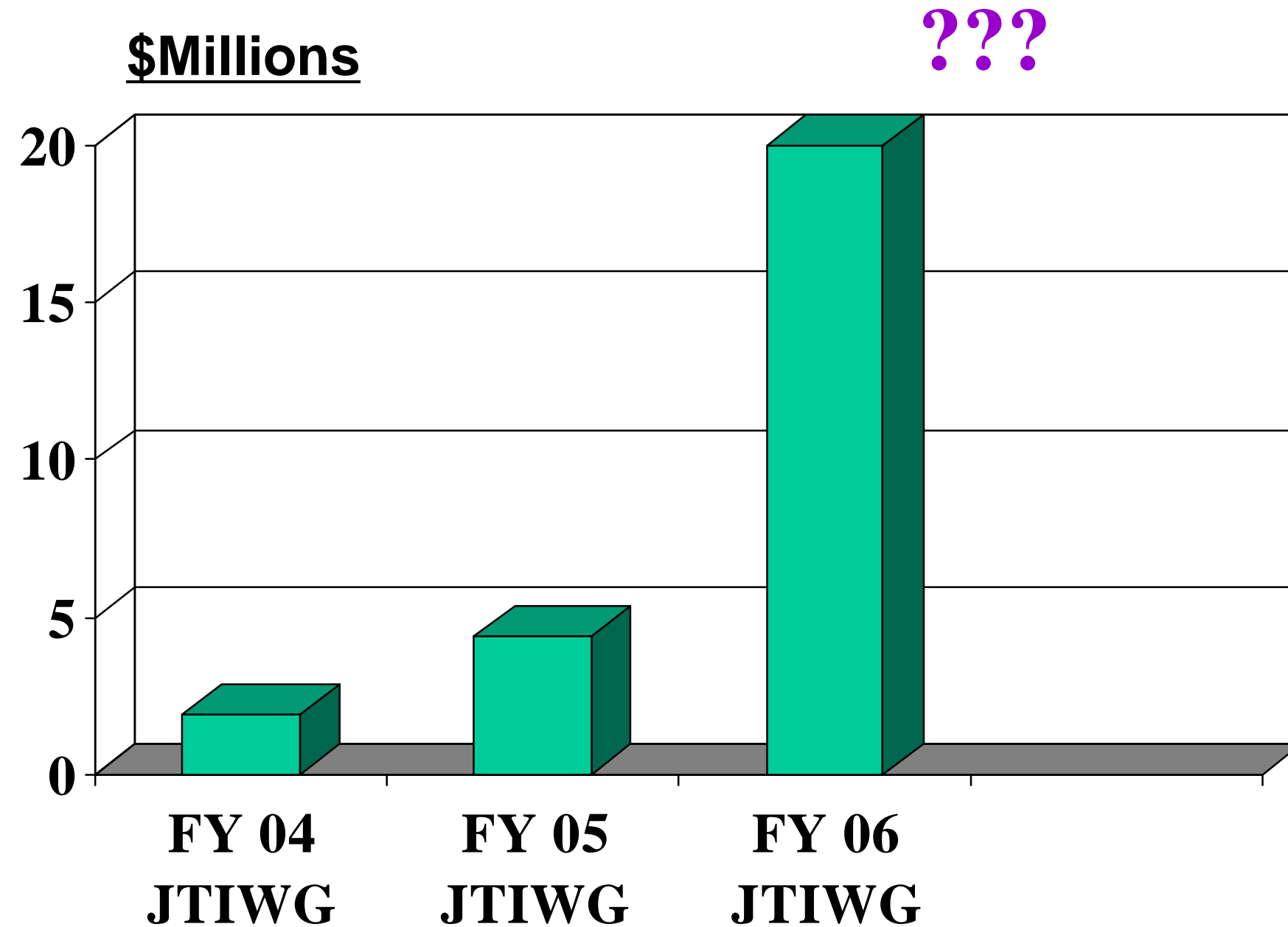
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DoD T&E EA



Joint CBDP T&E Funding



■ One CBDP T&E Element

JTIWG = Joint Test
Integrated Work Group

DoD T&E EA



Summary



- **T&E EA immediate impact: bring T&E community together to identify and address hard issues and establish common set of processes and policy**
- **We need Your Help in fully leveraging all available T&E capability-enabling technology and instrumentation:**
- **Bring us your ideas!**



Joint CBDP T&E POINT OF CONTACT



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